

Application No.: 10/777,562
Response dated: July 28, 2006
Reply to Office Action February 2, 2006

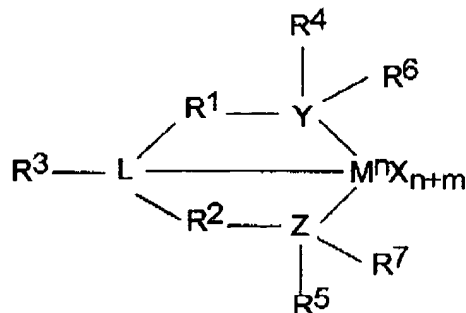
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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

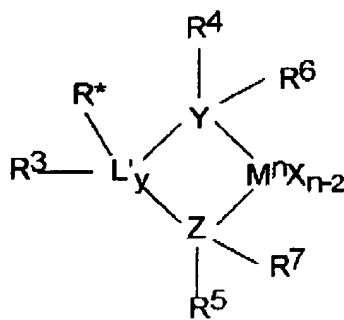
1. (Previously Presented) A process for polymerizing olefin(s) comprising combining said olefin(s) in the presence of a catalyst system comprising a Group 15 containing bidentate or tridentate ligated hafnium catalyst compound wherein the hafnium metal atom is bound to at least one leaving group and to at least two Group 15 atoms, wherein the at least one of the at least two Group 15 atoms is bound to a Group 15 or 16 atom through a bridging group, and a metallocene catalyst compound wherein metallocene compound and said Group 15 containing bidentate or tridentate ligated hafnium catalyst compound are added to a polymerization reactor in one of a slurry, a solution, an emulsion, a dispersion or a suspension.
2. (Original) The process of claim 1 wherein the bridging group is selected from the group consisting of a C₁ to C₂₀ hydrocarbon group, a heteroatom containing group, silicon, germanium, tin, lead, and phosphorus.
3. (Original) The process of claim 2 wherein the Group 15 or 16 atom may also be bound to nothing, a hydrogen, a Group 14 atom containing group, a halogen, or a heteroatom containing group, and wherein each of the two Group 15 atoms are also bound to a cyclic group and may optionally be bound to hydrogen, a halogen, a heteroatom or a hydrocarbyl group, or a heteroatom containing group.
4. (Original) The process of claim 1 wherein the Group 15 containing hafnium compound is represented by the formulae:

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Formula (I)

or



Formula (II)

wherein M is hafnium;

each X is independently a leaving group;

y is 0 or 1;

n is the oxidation state of M;

m is the formal charge of the Y, Z and L or the Y, Z and L' ligand;

L is a Group 15 or 16 element;

L' is a Group 15 or 16 element or Group 14 containing group;

Y is a Group 15 element;

Z is a Group 15 element;

R¹ and R² are independently a C₁ to C₂₀ hydrocarbon group, a heteroatom containing group having up to twenty carbon atoms, silicon, germanium, tin, lead, or phosphorus;

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R^3 is absent or a hydrocarbon group, hydrogen, a halogen, a heteroatom containing group;

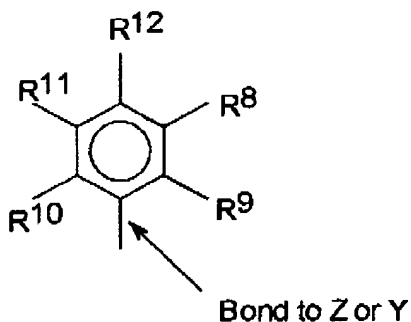
R^4 and R^5 are independently an alkyl group, an aryl group, substituted aryl group, a cyclic alkyl group, a substituted cyclic alkyl group, a cyclic arylalkyl group, a substituted cyclic arylalkyl group or multiple ring system;

R^1 and R^2 may be interconnected to each other, and/or R^4 and R^5 may be interconnected to each other;

R^6 and R^7 are independently absent, or hydrogen, an alkyl group, halogen, heteroatom or a hydrocarbonyl group; and

R^* is absent, or is hydrogen, a Group 14 atom containing group, a halogen, a heteroatom containing group.

5. (Original) The process of claim 4 wherein R^4 and R^5 are represented by the formula:



wherein R^8 to R^{12} are each independently hydrogen, a C_1 to C_{40} alkyl group, a halide, a heteroatom, a heteroatom containing group containing up to 40 carbon atoms, wherein any two R groups may form a cyclic group and/or a heterocyclic group and wherein the cyclic groups may be aromatic.

6. (Previously Presented) The process of claim 5 wherein R^8 to R^{12} are independently a methyl, ethyl, propyl or butyl group.
7. (Previously Presented) The process of claim 5 wherein R^8 to R^{12} are methyl groups.

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8. (Original) The process of claim 4 wherein L, Y, and Z are nitrogen, R¹ and R² are a hydrocarbon radical, R³ is hydrogen, and R⁶ and R⁷ are absent.
9. (Original) The process of claim 4 wherein L and Z are nitrogen, L' is a hydrocarbonyl radical, and R⁶ and R⁷ are absent.
10. (Original) The process of claim 1 wherein the catalyst system is supported on a carrier.
11. (Original) The process of claim 1 wherein the process is a continuous gas phase process.
12. (Original) The process of claim 1 wherein the process is a continuous slurry phase process.
13. (Original) The process of claim 1 wherein the olefin(s) is ethylene.
14. (Original) The process of claim 1 wherein the olefins are ethylene and at least one other monomer having from 3 to 20 carbon atoms.
15. (Original) The process of claim 1 wherein the catalyst system further comprises an activator.
16. - 45. Cancelled